



## **Prevalence of Sexual Problems and Associated Distress in Aging Men Across 4 European Countries**

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## ABSTRACT

**Background:** Among older men, comparable cross-cultural investigations of sexual problems and associated distress that also include a multitude of relevant explanatory variables of these sexual problem and related distress are rare in the research literature.

**Aims:** The aim of this study was to investigate prevalence rates of sexual problems and associated distress among older men across four European countries (Norway, Denmark, Belgium, Portugal) and assess which mental- and health related factors were associated with these.

**Methods:** Multinational cross-sectional questionnaire study using self-report measures.

**Outcomes:** Prevalence rates of sexual problems and associated distress.

**Results:** The study found a high prevalence of sexual problems lasting three months or longer across countries but that many men with sexual problems experienced minimal or no distress about these problems. The study also found marked cross-cultural differences in reported distress about sexual problems, with Southern European men (Portugal) reporting significantly more distress related to the majority of sexual problems investigated compared with Northern European men (Denmark, Norway). Finally, the study identified several relational, physical and mental health problems that were associated with the number of sexual problems men reported and the distress related to these problems.

**Clinical Translation:** We suggest that healthcare professionals also target distress when considering sexual problems among older men and contextualize these considerations within a multifactorial approach to general health where (other) mental- and physical health factors relevant to the patient's sexual health and function are also jointly considered.

**Strengths & Limitations:** Strengths of this study include the sample size, the inclusion of participants from four European countries, the assessment of distress associated with sexual problems, and the similar research design and method of data collection across the four included

countries. Limitations of the study include the cross-sectional design of the study, which precludes causal conclusions, the low response rate in the Portuguese sample, the lack of homosexual participants, and the lack of comprehensive assessments of dyadic factors which may be of relevance to sexual problems and associated distress.

**Conclusion:** The study found a high prevalence of sexual problems lasting three months or longer among older men across four European countries but also that many of the men with sexual problems experienced minimal or no distress about these problems.

**Keywords:** Sexual Problems; Sexual Functions; Sexual Distress; Cross-Cultural; Older Aged Men.

## **Prevalence of Sexual Problems and Associated Distress in Aging Men across Four European Countries**

### **INTRODUCTION**

In Western societies, current generations of older adults place a higher value on sexual health and activity than previous ones [1]. Many older adults consider sexual relationships important [2-5] and are sexually active well into their 70s and 80s [6, 7]. Whereas the frequency of sexual intercourse tends to decrease with age [8, 9] sexual activity continues to foster emotional intimacy and contributes to relationship strength in older age [10, 11, 12]. Active and satisfying sexual relationships in older adults have been associated with both quality of life [13], and physical and psychological well-being [2, 3, 11, 14, 15, 16], yet healthy sexual aging remains under-prioritized in research and public policy development [8, 9, 17-20]. Although there is inconsistency in the literature concerning the definition of an “older adult”, most definitions focus on individuals who are at least 60 or 65 years of age (see also [2, 3]).

The frequency of sexual behavior tends to decrease over time, however, this often happens in a non-linear fashion and is dependent on gender [8, 21]. In contrast, the importance of sex, attitudes about the relevance of sexual activity for the relationship, and sexual satisfaction appear to be relatively stable across life stages [3], particularly among partnered men and women who are in good physical health [8, 18, 22]. In this regard, it has been found that male partner's sexual problems are associated with a reduction in levels of sexual activity and the importance both partners attach to sex (e.g., [14, 23]).

Over the past two decades, more epidemiological research on sexual problems in older men has emerged, with the majority of studies focusing on erection problems [24]. This research shows that sexual problems are more prevalent in older than in younger men across all domains of sexual function, although prevalence estimates vary widely [21, 25-33]. For men aged 65+ years,

the frequency of erectile problems has been estimated to be between 10-77 % [30, 34-38], decreased desire/interest in sex 14-48 % [29, 30, 36, 39], delayed orgasm 6-39 %, early orgasm 11-28 %, and pain during intercourse 2-3 % [29, 30, 34, 39]. Main predictors of sexual problems in men have been found to be relationship status (i.e., being without a steady partner) [30, 40], poor physical health [30, 41-43], and poor mental health [40, 43].

Three important gaps in the literature on sexual problems in aging men can be identified. First, distress associated with sexual problems has been severely understudied. This is problematic, given that distress has been a required diagnostic criterion in diagnosing sexual problems as male sexual dysfunctions in e.g. the Diagnostic and Statistical Manual of Mental Disorders (DSM) since 1994 [44]. Men who report sexual problems do not always experience them as distressing and, thus, may not meet the criteria for a formal diagnosis which ‘opens the door’ to public health services. For example, the British Third National Survey of Sexual Attitudes and Lifestyles (NATSAL-3) found that 42 % of men reported sexual problems, but only 10 % reported distress about the symptoms, with no difference in distress found between sexually active and inactive men [30]. Similarly, studies on the pervasiveness of sexual problems in men have found much higher prevalence rates when these rates are based on (mostly physiological) symptoms and not on the co-occurrence of both symptoms and associated distress [45, 46, 47].

The type of sexual problem has been found to moderate experiences of distress, with men experiencing anorgasmia and decreased erectile functioning reporting the most distress [25, 47-50]. Factors found to be associated with less distress related to sexual problems include older age, increased emotional closeness during sex, more frequent intercourse, higher sexual satisfaction, and better sexual functioning [30, 49, 51-53]. In contrast, increased relationship duration, conflict with partner regarding sexual issues, and greater severity of the sexual problem have all been associated with increased distress [49, 52-54]. However, very few of these studies include

substantial cohorts of older men and none focus explicitly on older men only. Therefore, it remains unknown if the same factors moderate experiences of distress among older men also.

The second gap in the literature concerns the lack of multinational studies, which enables comparisons of sexual problems and associated distress across countries and cultures. To the best of the authors' knowledge, only sexual problems and correlates have been previously studied and compared in aging men across national samples (e.g., [52]) but not associated distress. Accordingly, the current study focused on possible differences in sexual problems and related distress among older men in two Northern European countries (Norway and Denmark), a more centrally located European country (Belgium), and a Southern European country (Portugal). In Southern Europe as compared to Northern Europe there is a much stronger adherence to traditional masculine gender constructions and roles [55, 56]. Given that socio-cultural variables, including gender constructions, roles, and stereotypes, may influence perceptions of sexuality and distress related to sexual problems [9], these may differ across countries. Employing multinational samples using comparable methodology, design, and measures, allowed the exploration of such possible country-level differences.

The third gap in the literature relates to the relative paucity of research that includes a more comprehensive array of previously indicated correlates and predictors of older men's sexual problems and distress and assesses their explanatory value in relation to these (see also [52]).

To address these gaps in the literature, we used recently collected data from cohorts of European men aged 60-75 years from Norway, Denmark, Belgium, and Portugal to investigate the following three research questions:

1. What are the prevalence rates of sexual problems and associated distress in older men in Denmark, Norway, Belgium and Portugal?

2. Is there a difference in the prevalence rates of sexual problem-related distress between the two included Northern European countries (i.e., Norway and Denmark) and the Southern European country (i.e., Portugal)?

3. What is the explanatory value of relevant sociodemographic factors (age, relationship status, education, religion and sexual orientation), lifestyle factors (smoking, alcohol consumption and exercise), and mental and physical health (functional health, well-being, medical conditions, anxiety and depression) on number of sexual problems reported and associated distress?

## **MATERIALS & METHODS**

### **Participants**

Questionnaire data were collected in national probability-based samples of men aged 60-75 years in Norway, Denmark, Belgium, and Portugal, between October 2016 and January 2017. Data collection was coordinated by the marketing research company IPSOS in cooperation with the Department of Psychology at the University of BLINDED FOR REVIEW. First, recruitment interviews were conducted by telephone, using landline and mobile registers, to obtain a nationally representative sample of the population of men and women between 60-75 years in each country. Regardless of gender, during the interview, it was emphasized that responses from sexually inactive individuals were equally important to those of sexually active individuals. Only data collected in men were used for this article; findings relating to women will be reported elsewhere. The average age of men in this study was 67 years for men in Norway, Denmark, and Belgium, and 66 years for Portugal (SD range 4.27 - 4.37). Participants characteristics can be found in Table 1.

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Insert Table 1 about here  
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### **Recruitment and Procedure**

The questionnaire was developed in English and subsequently translated into each country's native language by members of the research team and IPSOS's staff in the four participating countries. Following this, telephone recruitment of potential participants was initiated. With the exception of Portugal, national phone registries (landline and mobile) were used to produce representative samples of the target population. As a comprehensive national telephone register does not exist in Portugal, the following frequently used procedure for telephone survey recruitment was used there: 1) telephone numbers were first randomly selected from fixed phone directories and IPSOS's own database of phone numbers; 2) to obtain a distribution representative of the population, men and women were selected by age and gender; and 3) due to illiteracy problems, individuals who had not completed primary school (ISCED 1) were excluded from the sample. For all countries, telephone recruitment was carried out from October to December 2016.

Men and women who agreed to participate during the telephone recruitment interview were sent a postal, anonymous, self-administered questionnaire, including an informed consent form and a Freepost envelope to return the completed questionnaire. Two follow-up reminders were sent one and two weeks after the questionnaire had been mailed. After a discussion with IPSOS in Portugal, it was decided to deliver the reminders by phone. Unfortunately, 502 potential Portuguese participants could not be reached. Of the 1,498 Portuguese individuals contacted by phone, 561 declined participation after having received the questionnaire. Response rates were 68 % in Norway, 52 % in Denmark, 57 % in Belgium and 26 % in Portugal. A more detailed presentation of the sample and the procedure is given elsewhere [9].

### **Survey Questions**

Sociodemographic variables were taken from the Swedish sexual behavior study 1996 [57], the British NATSAL-3 [30], and the Sexual Behavior and Risks of HIV Infection in Europe survey [58]. Lifestyle factors and mental and physical health indicators were adapted from the



NATSAL-3 survey [30], the Copenhagen Aging and Midlife Biobank study (CAMB) [59], and the Common Mental Disorders Study in Denmark [60]. Indicators of sexual activity, sexual problems and associated distress were adapted from NATSAL-3 [30], and the DSM-5 [61].

## **Measures**

### ***Sociodemographic Variables***

Age was indicated by year of birth.

Sexual orientation was assessed by the following item: “Which of the options below best describes how you currently think of yourself? Response options were 1 = Heterosexual, 2 = Gay/Lesbian, 3 = Bisexual, and 4 = Other. Responses were later dichotomized into 1 = Heterosexual, and 2 = Other.

Relationship status was assessed by asking: “Do you currently have a steady/committed relationship with anybody? A steady/committed relationship also includes married/cohabiting persons.” The response categories were 1 = Yes, 2 = No, and 3 = Unsure. Nine respondents indicated they were unsure of their relationship status and were included in the “No” category.

Level of education was assessed as the highest level of formal completed education. In Norway, Denmark, and Portugal the response categories were 1 = Primary school (6-8 years at school), 2 = Lower secondary school (9-10 years at school), 3 = Higher secondary school, high school (12-13 years at school), 4 = College, lower university level (Bachelor degree level or similar), and 5 = Higher university level (Master degree, Ph.D. level or similar). In Belgium, additional response alternatives were added to mirror the educational system in the country. To allow for cross-cultural comparisons, the variable was subsequently recoded into 1 = primary (1), 2 = secondary (2+3), and 3 = tertiary education (4+5).

The following indicator measured religiosity: “Apart from special occasions such as weddings, funerals, and baptisms, how often do you attend religious services or meetings?” 1 = Once a week or more, 2 = Once every two weeks, 3 = Once a month, 4 = Twice a year, 5 = Once a year, 6 = Less than once a year, and 7 = Never.

### ***Sexual Problems and Distress***

Sexual problems were assessed using the following stem “In the last year, have you experienced any of the following for a period of 3 month or longer? [30]. This was followed by eight different sexual problems: “lacked interest in having sex”, “lacked enjoyment in sex”, “felt anxious during sex”, “felt physical pain as a result of sex”, “felt no excitement or arousal during sex”, “did not reach a climax (experienced an orgasm) or took a long time to reach a climax despite feeling excited/aroused”, “reached a climax (experienced an orgasm) more quickly than you would have liked” and “had trouble getting or keeping an erection”. For each problem, response options were “yes” or “no.” If a participant responded with a “yes”, he was asked to indicate how much distress the problem had caused him (“no distress”, “mild distress”, “moderate distress”, or “severe distress”).

### ***Lifestyle Factors***

Smoking, alcohol consumption and exercise were assessed using the following items: Smoking: “On average, how much do you usually smoke during a typical week?” The participant was asked to write the combined number of cigarettes/cigars/cheroots etc. and indicate 000 if he did not smoke.

Exercise: “How many hours per week do you exercise?” with the following explanatory text: “Apart from sports please also include household and gardening activities, walks, and bike rides to and from work and/or leisure activities.”

Alcohol consumption: “On average, how many alcoholic beverages do you consume in a typical week?” Responses were given separately for beer, wine, port/sherry etc., and spirits and combined into a single score by adding the four scores.

### ***Mental and Physical Health and Wellbeing Factors***

The Short Form Health Survey (SF12) was used to measure functional health and well-being from the participant’s point of view [62]. The SF12 includes 12 items and various response scales. Scores were summed using the official coding schemes to provide overall scores on two sub-dimensions: mental health and physical health. Higher scores indicate better health and well-being.

Health problems were assessed using the NATSAL-3 questions on medical conditions [63]. Respondents were asked “has a doctor ever told you that you have any of the medical conditions listed below?” followed by 11 medical conditions (e.g., diabetes, prostate cancer, arthritis) (yes/no). Results were summed to provide a score between 0-11, with higher scores indicating a higher number of health problems.

Anxiety and Depression were assessed using 10 items from the Common Mental Disorders–screening Questionnaire (CMD-SQ) [60], measuring anxiety (4 items) and depression (6 items). Higher scores indicate higher levels of anxiety and depression. Cronbach’s alpha for the scale was .85.

### **Statistical Analysis**

SPSS 24.0 was used to perform chi square analyses, bivariate analyses and multiple regression analyses. Missing data was generally < 5 % across included variables, except for SF12 data where it was 13.5 %. Following missing data analyses and assuming data were missing at random, multiple imputation for all descriptive and explanatory variables was conducted using 20 sets of imputations [64]. For the correlation matrix and multiple regressions, analyses were initially

stratified by country and results inspected to see if there were significant differences between the four countries. As neither the magnitude of intercorrelations between variables nor the explanatory value of the relevant included variables in the multiple regression analyses differed considerably between countries, we report only one overall correlation matrix and conducted multiple regression analyses based on the entire sample.

Due to the stem assessing sexual problems and distress specifically targeting “last year” (see also the Measure section), only respondents who had had sexual activity (sexual intercourse, masturbation, petting or fondling) in the last year were included in the analyses of sexual problems and distress. Only men who reported a sexual problem were asked to respond to questions about their level of distress about that sexual problem. Across the eight sexual problems, an overall distress score was calculated (summed) based on “no distress” = 0, “mild distress” = 1, “moderate distress” = 10 and “severe distress” = 100. To maintain maximum power in the regressions, the log transformed values of the distress scores were used in the analyses, with ‘1’ added to each overall score. The assigned distress numbers (i.e. 0, 1, 10 or 100) were selected so that higher levels of distress always outranked any combination of preceding levels of distress. For example, any combination of “no” (score 0) and “mild” distress (score 1) would always be outranked by one or more experiences of “moderate” (score 10) or “severe” (score 100) distress. Likewise, any combination of “no” (0), “mild” (1) and “moderate” (10) distress would always be outranked by one or more experiences of “severe” (100) distress.

In the regression analysis for number of sexual problems, we used a one-step enter procedure. For each of the three regression analyses for distress, we used a two-step entry procedure. In the two-step procedure, in the first step, we entered all variables simultaneously, except “number of sexual problems”, which was included in the second step. The two-step procedure was chosen to assess the explanatory effect of number of sexual problems on distress

over and above included sociodemographic, life style factors and mental and physical health related factors.

## RESULTS

Across the four countries, a majority of men (73.7 % - 79.8 %) had experienced at least one sexual problem and between 49.1 % (Denmark) and 58.2 % (Belgium) had experienced 2 or more sexual problems lasting three months or longer in the last year (see Table 2 and 3). Across countries, the three most prevalent sexual problems were (1) erectile problems, (2) reaching orgasm more quickly than desired, and (3) failure to reach orgasm or taking too long to climax. Across countries, physical pain as a result of sex was the least reported problem, with prevalence rates ranging between 3.3 % (Belgium) and 6.0 % (Portugal). Levels of distress related to sexual problems were generally highest for erectile problems. No clear distress pattern emerged across countries for other sexual problems (see also Table 4).

Regarding our second research question, we found clear evidence of differences between the two Northern (Denmark, Norway) and the Southern European country (Portugal) in reported distress over sexual problems. For five of the eight sexual problems, Southern European older age men reported significantly more distress than Northern European older aged men ( $p < .05$  and  $.001$ ) whereas the reverse was not evident across any of the sexual problems. Differences in distress about specific sexual problems were strongest for (1) reaching an orgasm more quickly than desired, (2) erectile problems (3) failure to reach orgasm or taking too long to climax. In this regard, older Belgium men's distress profile related to sexual problems approximated Southern European men more so than Northern European men.

To investigate our third research question, we conducted four separate multivariate regression analyses; one for the overall number of sexual problems and three for distress related to

specific sexual problems. Following Carvalho et al. [65], who found that the sexual response of men with sexual difficulties could best be characterized by a “general sexual difficulty factor” and a “premature ejaculation factor”, we summed distress scores for a) sexual problems related to sexual interest, erectile function, and orgasmic function i.e., “general sexual function distress”, b) premature ejaculation i.e., “early ejaculation distress” and c) all eight sexual problems assessed i.e., “overall sexual problems distress” [65].

For each of the four regression analyses, we first inspected point-biserial correlations, (see Table 5) as including a large number of variables in regression models is not recommended unless there are compelling reasons to do so. Consequently, for each regression, we included only variables that were significantly correlated with the criterion variable.

As shown in Table 6, the regression model for number of sexual problems was highly significant, accounting for 9.6 % of the explained variance in sexual problems ( $R = .316$ ; adjusted  $R^2 = .096$ ;  $p < .01$ ). Thus, being in a relationship, lower levels of exercise, higher number of diagnosed health problems, poorer physical and mental health, and more symptoms of anxiety and depression significantly predicted a higher frequency of sexual problems.

For distress related to sexual problems, all three regression models were highly significant ( $p < .01$ ). For overall sexual problem distress, a higher number of diagnosed health problems, poorer physical health and a higher number of sexual problems significantly predicted higher levels of overall distress and accounted for 46.5% of the total explained variance of overall distress ( $R = .683$ ; adjusted  $R^2 = .0465$ ;  $p < .01$ ). For general sexual function distress, a higher number of diagnosed health problems, more symptoms of anxiety and depression and a higher number of sexual problems significantly predicted increased levels of general function distress and accounted for 42.2 % of the total explained variance of general function distress ( $R = .651$ ; adjusted  $R^2 = .422$ ;  $p < .01$ ). For early ejaculation distress, poorer mental health, more symptoms of anxiety

and depression and a higher number of sexual problems significantly predicted higher levels of premature ejaculation-related distress and accounted for 8.5 % of the total explained variance of premature ejaculation distress ( $R = .297$ ; adjusted  $R^2 = .085$   $p < .01$ ).

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Insert Tables 2-6 about here  
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## DISCUSSION

In this cross-country study of European older men, we found a high prevalence of sexual problems lasting three months or longer across countries but, consistent with previous research [30, 52, 66], many men with sexual problems reported minimal or no distress about these problems. The fact that the rate of reporting sexual problems was high could be due to a selection bias whereby men with sexual problems were more inclined to answer the postal survey than men without sexual problems. Regarding cross-country differences, there were marked differences in reported distress about sexual problems, with Southern European men (Portugal) reporting significantly more distress related to five of the eight sexual problems compared with Northern European men (Denmark, Norway). In this regard, the sexual distress profile of Belgium men approximated that of Southern European men more so than that of Northern European men. Finally, we identified several relational, physical and mental health problems that were associated with the number of sexual problems men reported and the distress related to these problems.

### Comparison of prevalence rates with previous surveys

Prevalence estimates from different studies are difficult to compare due to diverse criteria/definitions of sexual problems used, differences in the timeframe for the presence of sexual problems employed, and the different age ranges of samples used [52, 66]. However, because we used the same sexual problem questions and timeframe as in the British population-based

NATSAL-3 survey (and the age range sampled was similar - 60-75 years in our survey vs. 65-74 years in NATSAL-3), we can compare the prevalence rates for sexual problems across the four countries with the British NATSAL-3 sample. In the current study, across the four countries, between 73.7 % - 79.8 % of men reported having experienced one or more sexual problem and between 49.1 % - 58.2 % reported two or more sexual problems. These figures are substantially higher than the NATSAL-3 findings, where 53.5 % of men aged 60-74 reported one or more sexual problem and 13.0 % two or more sexual problems [30]. In both surveys, the most common sexual problem reported was trouble getting or keeping an erection, but here again our prevalence rates were considerably higher than in NATSAL-3 sample (47.9-59.3 % vs. 30.0 %). Possible reasons for the discrepant rates include the fact that although the questions were identical, NATSAL-3 participants were interviewed with a combination of computer-assisted face-to-face and self-completed questionnaires, whereas our respondents completed anonymous postal questionnaires. It is possible that men might feel more open about disclosing sexual difficulties in an anonymous survey than during an interview.

Other surveys have reported prevalence rates for sexual problems in older men closer to ours [34, 66, 67]. Regarding erection problems specifically, in the U.S. National Social Life, Health and Aging Project, the prevalence of erection problems for men aged 75-85 was 43.5 % [29]. In another national probability sample of U.S. men aged 57 to 85 years, erection problems occurring “for several months or more” during the past year were reported by 44.6 % of men aged 65-74 years and 43.5 % of men aged 75-85 years [21]. In Træen and Stigum’s [32] population-based study in Norway, 34 % of men aged 60-67 years reported erection problems. Together with our findings, these studies indicate that sexual problems are frequent in populations of older men across diverse cultures [52].

### **Distress about sexual problems**



Levels of distress were highest in relation to erection problems, although even for this problem, for three of the four countries (Norway, Belgium, and Portugal) between 35-44 % of men who self-reported having difficulty reaching or maintaining an erection reported “no” or “mild” distress related to this problem. For Denmark, the percentage was substantially higher (67 %) and more similar to NATSAL-3 sample where 67.1 % of men aged 65-74 who self-reported having erection problems stated these were “not at all” or only “a little” distressed about these. As mentioned above, for five of the eight sexual problems (lacked interest in having sex, lacked enjoyment in sex, difficulty in reaching a climax, reached climax more quickly than would have liked, and trouble getting or keeping an erection), older men in the Southern European country (Portugal) reported greater distress than those in Northern European countries (Denmark, Norway). In this regard, older Belgium men’s distress profile related to sexual problems approximated Southern European men more so than Northern European men.

These numbers point to at least two important findings. First, across European cultures, it appears that the proportion of men who report sexual problems but who do not experience any or mild distress is substantial. This mirrors findings for older women, where the probability of experiencing significant levels of distress in relation to sexual problems is inversely related to age i.e., the higher the age the less the likelihood of experiencing distress [2, 8]. Second, cultural differences in the proportion of men who report sexual problems but do not experience any or mild distress is evident across Europe. As mentioned in the Introduction, this may be a reflection of cross-cultural differences in gender constructions, roles, values, and stereotypes that may influence perceptions of sexuality and distress related to sexual problems [9, 55, 56]. However, it may also be an effect of a sample selection bias in that the response rate for our Southern European country (Portugal) was low and substantially lower than for the other included countries (i.e. Norway, Denmark, and Belgium). Finally, it may also be that older men simply expect sexual difficulties to

appear as a natural and inevitable part of the aging process and thus as natural. This may influence the affective response associated with the experiences of sexual problems and cause less distress [51, 53]. We call for more research specifically designed to further qualify this part of our findings.

#### **Factors associated with the experience of sexual problems and associated distress**

Relatively few studies have investigated factors associated with sexual problems in older men [29, 39, 52, 66] and those that have, have mainly focused on physical risk factors for erection problems (e.g., [34]). We assessed the associations between a broad range of factors, including lifestyle, relational, physical and mental health factors, and reported sexual problems. Being in a relationship, lower levels of exercise, higher number of diagnosed health problems, poorer general physical and mental health, and more symptoms of anxiety and depression were all associated with a higher frequency of sexual problems.

Our findings are broadly consistent with previous research. Many studies have found strong relationships between depression and sexual difficulties [7, 34]. There is also consistent evidence that physical health and mental health problems generally are associated with sexual problems [52]. Among American men and women aged 57-85 years, lower satisfaction with intimate relationships, more male sexual problems, and poorer physical and mental health were linked with sexual health problems [29]. In a population-based study of Australian men aged 75-95 years, risk factors associated with sexual problems included chronic disease, depression, and insomnia [39]. In the NATSAL-3 survey, across all age groups of men, poorer physical health, limiting disabilities, functional impairment, and depressive symptoms were associated with erectile difficulties [30].

We also investigated possible associations between sociodemographic, lifestyle, and health variables and distress about sexual problems. To the best of our knowledge, no previous studies have explored this in older men. For “overall sexual problem distress”, a greater number of diagnosed health problems, poorer physical health, and a higher number of sexual problems were all

associated with higher levels of distress. For “general sexual problem distress” (our composite variable of distress related to sexual interest, erectile function and orgasmic function problems), a greater number of diagnosed health problems, more symptoms of depression and anxiety and a higher number of sexual problems were all associated with higher levels of general sexual function distress. Predictors for “early ejaculatory distress” were poorer mental health and a higher number of sexual problems.

### **Clinical and research implications**

While erection problems, reaching orgasm more quickly than desired, and trouble reaching orgasm were the most common sexual problems reported, sizeable proportions of older men reported lacking enjoyment in sex or feeling anxious during sex. These findings underline the need for researchers to consider men’s experience of sexual problems beyond biomedical or “sexual function” difficulties, which have been the focus of most studies carried out among older men. Our findings also highlight the importance of assessing sexual problems and associated distress in older men, both in epidemiological surveys and in clinical settings. On the one hand, clinicians should not assume that all older men will be concerned about sexual difficulties, including erection problems. Despite the focus on penetrative sex in many studies [68], there is evidence that with increasing age, men and women may place greater importance on other types of sexual activity [69] and on intimacy with partners [70]. On the other hand, a substantial proportion of older men *are* distressed about sexual difficulties. From our data, the sexual difficulties most commonly associated with moderate/severe distress, across the four countries, were: erection problems, feeling anxious during sex, and lacking enjoyment in sex. Future studies should ascertain the proportion of older adults with moderate/severe distress about their sex life who want to obtain help for these problems. Previous research has found that many older adults do not seek help for sexual difficulties [30, 71]. This may be because older adults are not bothered by their sexual difficulties to a degree that they

will ask for treatment. However, it may also be related to the fact that health professionals often do not ask older adults about sexual problems, have problems detecting sexual problems in their patients or that older men find it embarrassing to discuss their sexual difficulties with health care professionals [72, 73]. Therefore, we suggest that healthcare professionals also target distress when considering sexual problems among older men and contextualize these considerations within a multifactorial approach to general health where (other) mental- and physical health factors relevant to the patient's sexual health and function are also jointly considered. Further, we suggest that epidemiological surveys involving older age men more frequently assess sexual problems and related distress and their relationship(s) with more general mental- and physical health care outcomes.

### **Strengths and limitations**

Strengths of this study include the sample size, the inclusion of participants from four European countries, the assessment of distress associated with sexual problems, the use of mainly validated measures that have been employed in previous surveys, and the similar research design and method of data collection across the four countries enabled between-country comparisons.

Limitations of the study also need to be acknowledged. The cross-sectional design precludes conclusions about causal relationships. Further, the response rate in the Portuguese sample was low which makes generalizations of our results problematic. Taking into account that our analyses only included men who had been sexually active in the past year our findings may have underestimated the prevalence of sexual problems especially since these men may be healthier than the general background population in the included countries. Considering that over 95 % of our participants identified as heterosexual, we were unable to include any analysis of sexual orientation as a variable affecting prevalence of, or distress about, sexual problems. Recent qualitative work suggests that gay and bisexual men's sexual difficulties may need to be conceptualized differently than

heterosexual men's [74]; thus, our findings should not be generalized to older men who identify as other than heterosexual. Finally, we assessed a range of sociodemographic, lifestyle, and health factors as possible correlates of sexual problems, but acknowledge that other social and psychological factors also play an important role in the genesis and maintenance of sexual problems (see also [75]). For example, future research would benefit from considering dyadic and partner-related factors when investigating sexual problems and related distress among older men.

### **Conclusions**

The current findings add to the growing literature on sexual problems among older populations. The cross-country differences in prevalence rates and in particular, in the frequency of distress about sexual problems, underscore the importance of the social-cultural context of sexual difficulties and related distress assessment. Further, it should be noted that although prevalence rates of sexual problems were found to be high, across countries, a sizeable proportion of older men reported only 'mild' or 'no' distress about these problems.

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Formateret: Engelsk (USA)

**TABLE 1**  
Sample Characteristics

Formateret: Engelsk (USA)

	Norway <sup>a</sup>		Denmark <sup>b</sup>		Belgium <sup>c</sup>		Portugal <sup>d</sup>	
	<i>M</i> % ( <i>n</i> )	<i>SD</i>	<i>M</i> % ( <i>n</i> )	<i>SD</i>	<i>M</i> % ( <i>n</i> )	<i>SD</i>	<i>M</i> % ( <i>n</i> )	<i>SD</i>
<b>Age</b>	67.29 (590)	4.37	67.67 (442)	4.31	67.07 (256)	4.27	65.86 (179)	4.33
<b>Education level</b>								
Primary	9.2 (54)		26.4 (116)		9.4 (24)		23.5 (42)	
Secondary	32.4 (191)		36.1 (159)		48.8 (125)		53.6 (96)	
Tertiary	58.5 (345)		37.5 (165)		41.8 (107)		22.9 (41)	
<b>Religiosity - attending services (1-7)</b>	2.4 (582)	1.60	2.53 (438)	1.66	2.73 (255)	2.01	3.31 (175)	2.08
<b>Sexual orientation</b>								
Heterosexual	96.8 (570)		96.5 (418)		93.3 (235)		94.0 (158)	
<b>Relationship status</b>								
In a relationship	87.4 (511)		87.1 (384)		87.0 (221)		92.7 (165)	
<b>Mental health indicators</b>								
Anxiety & Depression (0-4)	1.39 (589)	0.43	1.37 (441)	.46	1.47 (254)	.54	1.48 (173)	0.44
SF-12 Mental Health (1-100)	55.56 (526)	6.91	55.54 (392)	6.66	54.17 (210)	6.76	54.52 (141)	6.62
<b>Physical health indicators</b>								
Health Problems (0-11)	0.95 (590)	0.98	1.2 (442)	1.06	1.02 (256)	1.03	1.12 (179)	0.9
SF-12 Physical Health (1-100)	48.37 (526)	8.52	49.15 (392)	8.12	48.30 (210)	8.60	47.00 (141)	58.51
<b>Life style</b>								
Number of hours exercise (per week)	4.16 (584)	1.48	3.99 (439)	1.62	4.92 (254)	1.37	3.69 (179)	1.74
Number of cigarettes (per week)	7.39 (579)	25.86	12.01 (437)	38.09	8.24 (251)	8.24	8.69 (178)	28.03
Number of alcohol units (per week)	7.41 (587)	8.67	11.58 (441)	11.94	10.7 (253)	10.39	8.89 (178)	9.51

Note. <sup>a</sup>*n* = 590 <sup>b</sup>*n* = 442 <sup>c</sup>*n* = 256 <sup>d</sup>*n* = 179



TABLE 2

Prevalence rates of Men Who have had Sexual Activity in the Last Year and Experienced Sexual Problems for a Period of Three Months or Longer in the Last Year

Variable	Norway				Denmark				Belgium				Portugal			
	Yes %	(n)	No %	(n)	Yes %	(n)	No %	(n)	Yes %	(n)	No %	(n)	Yes %	(n)	No %	(n)
Lacked interest in having sex	17.4	(97)	82.6	(459)	16.7	(71)	83.3	(353)	29.4	(73)	70.6	(175)	18.5	(29)	81.5	(128)
Lacked enjoyment in sex	12.8	(67)	87.2	(456)	11.5	(47)	88.5	(363)	24.5	(58)	75.5	(179)	11.0	(16)	89.0	(130)
Felt anxious during sex	6.7	(35)	93.3	(487)	4.7	(19)	95.3	(383)	8.7	(20)	91.3	(210)	34.0	(51)	66.0	(99)
Felt physical pain as a result of sex	3.4	(18)	96.6	(517)	4.1	(17)	95.9	(395)	3.3	(8)	96.7	(232)	6.0	(9)	94.0	(141)
Felt no excitement or arousal during sex	14.0	(73)	86.0	(449)	12.7	(52)	87.3	(358)	13.4	(31)	86.6	(200)	32.2	(49)	67.8	(103)
Did not reach a climax (experience an orgasm) or took a long time to reach a climax despite feeling excited	34.1	(181)	65.9	(350)	36.6	(150)	63.4	(260)	31.4	(74)	68.6	(162)	37.0	(57)	63.0	(97)
Reached a climax (experienced an orgasm) more quickly than you would have liked	37.0	(195)	63.0	(332)	39.0	(158)	61.0	(247)	36.2	(84)	63.8	(148)	47.4	(74)	52.6	(82)
Had trouble getting or keeping an erection	51.2	(276)	48.8	(263)	53.0	(222)	47.0	(197)	59.3	(144)	40.7	(99)	47.9	(78)	52.1	(85)

Note. Missing values excluded

**TABLE 3**

Accumulated Number of Sexual Problems among Men Who have had Sexual Activity in the Past Year and Experienced Sexual Problems for a Period of Three Months or Longer in the Last Year

	Norway (N=479)		Denmark (N=375)		Belgium (N=208)		Portugal (N=130)	
	%	(n)	%	(n)	%	(n)	%	(n)
<b>Accumulated number of sexual problems</b>								
None	26.3	(126)	24.8	(93)	20.2	(42)	26.2	(34)
1	22.1	(106)	26.1	(98)	21.6	(45)	17.7	(23)
2	23.6	(113)	25.3	(95)	25.0	(52)	16.2	(21)
3	14.8	(71)	12.5	(47)	17.8	(37)	13.8	(18)
4	7.7	(37)	5.6	(21)	8.7	(18)	13.1	(17)
5	4.6	(22)	2.7	(10)	4.3	(9)	5.4	(7)
6 or more	0.8	(4)	2.9	(11)	2.4	(5)	7.7	(10)
<b>Accumulated number of sexual problems dichotomized</b>								
None	26.3	(126)	24.8	(93)	20.2	(42)	26.2	(34)
1 or more	73.7	(353)	75.2	(282)	79.8	(166)	73.8	(96)

*Note.* Missing values excluded. Range 0-8 (lacked interest in having sex, lacked enjoyment in sex, felt anxious during sex, felt physical pain as a result of sex, felt no excitement or arousal during sex, did not reach a climax (experienced an orgasm) or took a long time to reach a climax despite feeling excited, reached a climax (experienced an orgasm) more quickly than you would have liked, had trouble getting or keeping an erection).

TABLE 4

Levels of Distress among Men Who have had Sexual Activity in the Past Year and Experienced Sexual Problems for a Period of Three Months or Longer in the Last Year

Variable (n)	Norway				Denmark				Belgium				Portugal				North-South Differences <sup>a</sup>
	Level of Distress % (n)				Level of Distress (%)				Level of Distress (%)				Level of Distress (%)				Level of Distress
	No ne	Mi ld	Moder ate	Sev ere	No ne	Mi ld	Moderate	Sev ere	No ne	Mi ld	Mode rate	Sev ere	No ne	Mi ld	Mode rate	Sev ere	Pearson Chi-square (df = 1)
Lacked interest in having sex	37.5 (36)	31.3 (38)	26.0 (25)	5.2 (5)	52.2 (35)	31.3 (21)	14.9 (10)	1.5 (1)	19.4 (13)	32.8 (22)	35.8 (24)	11.9 (8)	9.1 (2)	45.5 (10)	22.7 (5)	22.7 (5)	4.001*
Lacked enjoyment in sex	29.2 (19)	33.8 (22)	26.2 (17)	10.8 (7)	40.5 (17)	40.5 (17)	16.7 (7)	2.4 (1)	13.2 (7)	32.1 (11)	47.2 (25)	7.5 (4)	15.4 (2)	23.1 (3)	23.1 (3)	38.5 (5)	5.219*
Felt anxious during sex	8.8 (3)	41.2 (14)	41.2 (14)	8.8 (3)	12.5 (2)	50.0 (8)	31.3 (5)	6.3 (1)	5.9 (1)	35.3 (6)	35.3 (6)	23.5 (4)	13.0 (6)	56.5 (2)	28.3 (13)	2.2 (1)	2.451
Felt physical pain as a result of sex	5.6 (1)	55.6 (11)	27.8 (5)	11.1 (2)	7.1 (1)	78.6 (11)	14.3 (2)	0.0 (0)	14.3 (1)	14.3 (1)	57.1 (4)	14.3 (1)	0.0 (0)	44.4 (4)	44.4 (4)	11.1 (1)	2.350
Felt no excitement or arousal during sex	20.3 (14)	40.8 (28)	30.4 (21)	8.7 (6)	58.5 (24)	26.1 (11)	14.6 (6)	0.0 (0)	25.9 (7)	22.2 (6)	37.0 (10)	14.8 (4)	20.0 (7)	34.3 (1)	22.9 (8)	22.9 (8)	2.931
Did not reach a climax (experience an orgasm) or took a long time to reach a climax despite feeling excited	30.6 (53)	42.7 (73)	23.1 (40)	4.0 (7)	43.9 (54)	34.1 (42)	20.3 (25)	1.6 (2)	13.8 (9)	36.9 (24)	30.8 (20)	18.5 (12)	12.0 (6)	44.0 (22)	32.0 (16)	12.0 (6)	7.703**
Reached a climax (experience an orgasm) more quickly than you would have liked	23.5 (42)	49.2 (88)	24.6 (44)	2.8 (5)	54.1 (66)	31.3 (38)	13.1 (16)	1.6 (2)	18.1 (13)	34.7 (25)	31.9 (23)	15.3 (11)	28.6 (18)	25.4 (11)	41.3 (26)	4.8 (3)	15.162** *

Had trouble getting or keeping an erection	9.8 (25 )	34. 4 (8 8)	43.0 (110)	12.9 (33)	27. 0 (51 )	39. 7 (7 5)	24.3 (46)	9.0 (17)	8.1 (10 )	29. 0 (3 6)	41.9 (52)	21.0 (26)	7.6 (5)	27. 3 (1 8)	45.5 (30)	19.7 (13)	8.182**
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*Note.* Missing values excluded. Range of missing values; \*Norway & Denmark versus Portugal; \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

**TABLE 5**

Correlations between variables of interest

Variable	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.
1. Sexual problems - 6 or highest	1																
2. Sexual problems - none or 1 and more	.67**	1															
3. Overall sexual distress	.68**	.51**	1														
4. General sexual function	.65**	.46**	.93**	1													
5. Premature ejaculation	.30**	.23**	.48**	.26**	1												
6. Age	-.00	.03	.00	.03	-.03	1											
7. Relationship status	.05*	.06*	.04	.03	.02	.05	1										
8. Level of education	-.01	.01	.02	.02	-.00	-.03	-.00	1									
9. Orientation	.01	-.01	.00	.01	.02	.03	-.14**	-.07*	1								
10. Religiosity - attending services	.00	.02	-.01	.00	-.04	.11**	.04	.02	.01	1							
11. Number of hours exercise per week	-.11**	-.07**	-.07**	-.08**	-.00	.08**	.04	.12**	-.02	.03	1						
12. Number of cigarettes per week	.03	-.00	.03	.02	.00	-.05	-.08**	-.04	.07**	-.10**	-.10**	1					
13. Units of alcohol per week	.02	.05*	.00	.01	-.02	.01	.01	.03	-.03	-.15**	.02	.13**	1				
14. Health problems	.13**	.09**	.16**	.17**	.04	.16**	-.05*	-.08**	.02	.04	-.10**	-.03	-.01	1			
15. SF-12 Physical Health	-.17**	-.10*	-.19**	-.19**	-.05	-.01	.07**	.15**	-.02	.01	.18**	-.06*	-.01	-.28**	1		
16. SF-12 Mental Health	-.20**	-.14*	-.20**	-.19**	-.13**	-.07**	.07**	.03	-.02	.01	.11**	-.06*	-.08*	-.10**	-.13**	1	
17. Anxiety & Depression Index	.23**	.14**	.24**	.23**	.10**	-.08**	-.20**	-.04	.07**	-.01	-.09**	.10**	.09**	.10**	-.24**	-.57**	1

Note. \*  $p < .05$ ; \*\*  $p < .01$

**TABLE 6**

Model Summary of Hierarchical Multiple Regression Analyses Predicting Sexual Problems and Related Distress

Variable	<u>Model 1</u>			<u>Model 2</u>		
	<i>B</i>	<i>SE B</i>	$\beta$	<i>B</i>	<i>SE B</i>	$\beta$
Number of Sexual Problems						
Relationship status	.515	.120	.110**	-	-	-
Number of hours exercise per week	-.064	.025	-.064*	-	-	-
Number of diagnosed health problems	.119	.040	.077*	-	-	-
SF-12 Physical Health	-.017	.005	-.094*	-	-	-
SF-12 Mental Health	-.020	.008	-.090*	-	-	-
Anxiety & Depression Index	.574	.109	.173**	-	-	-
R		.316				
Adjusted $R^2$		.096			-	
<i>F</i>		26.579**			-	
Overall Sexual Problems Distress						
Number of hours exercise per week	-.010	.026	-.011	.026	.020	.023
Number of diagnosed health problems	.152	.042	.100**	.083	.032	.053*
SF-12 Physical Health	-.021	.006	-.114**	-.010	.004	-.057*
SF-12 Mental Health	-.020	.008	.073*	-.007	.007	-.019
Anxiety & Depression Index	.476	.120	.148**	.165	.093	.053
Number of sexual problems				.653	.020	.643**
R		.297			.683	
Adjusted $R^2$		.085			.465	
$\Delta R^2$ change		.088			.379	
<i>F</i> for $\Delta R^2$		28.27**			1036.22**	
General Sexual Function Distress						
Number of hours exercise per week	-.019	.024	-.022	.012	.019	-.009

Number of diagnosed health problems	.165	.038	.115**	.105	.030	.078**
SF-12 Physical Health	-.018	.005	-.112**	-.008	.004	-.034
SF-12 Mental Health	-.014	.008	.059	-.003	.006	-.010
Anxiety & Depression Index	.446	.109	.147**	.177	.088	.062*
Number of sexual problems				.563	.019	.606**
R		.296			.651	
Adjusted R <sup>2</sup>		.081			.422	
$\Delta R^2$ change		.088			.337	
F for $\Delta R^2$		28.07**			854.06**	

Early Ejaculation Distress						
SF-12 Mental Health	-.012	.005	-.095*	-.009	.004	-.073*
Anxiety & Depression Index	.059	.065	.037	-.034	.062	-.017
Number of sexual problems				.157	.014	.295**
R		.126			.312	
Adjusted R <sup>2</sup>		.014			.096	
$\Delta R^2$ change		.016			.082	
F for $\Delta R^2$		11.78**			132.23**	

\*  $p < .01$ ; \*\*  $p < .001$